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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/077,601	02/15/2002	Pengfei Wu	UMAB-021XX	1545
207 7590 08/08/2007 WEINGARTEN, SCHURGIN, GAGNEBIN & LEOVICI LLP TEN POST OFFICE SQUARE BOSTON, MA 02109			EXAMINER ANGEBRANNDT, MARTIN J	
			ART UNIT 1756	PAPER NUMBER
			MAIL DATE 08/08/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/077,601	<b>Applicant(s)</b> WU ET AL.	
	<b>Examiner</b> Martin J. Angebrannt	<b>Art Unit</b> 1756	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 6/1/07.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 7-15,21 and 23-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-15,21 and 23-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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1. The response of the applicant has been read and given careful consideration. Responses to the arguments of the applicant are presented after the first rejection to which they are directed. Rejections of the previous action, not repeated below are withdrawn based upon the arguments and amendments to the claims.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 9-11 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

These claims depend upon cancelled claim 8.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5. patented or described in a printed publication in this or a foreign country or in public use or on sale in this country,

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. Claims 7-11 and 23-27 are rejected under 35 U.S.C. 102(a) as being fully anticipated by Jager et al., "Bicolor surface reliefs in azobenzene side chain polymers", Appl. Opt., Vol. 40(11) pp. 1776-1778 (04-2001).

Jager et al., teach polymer compositions with side chain polymers having the chemical structure shown in figure 1, which are coated on a glass slide and two s-polarized red laser beams (645 nm) were used together with a blue (488 nm) laser which was either p or s polarized. This grating is disclosed with respect to figure 3 as being stable for several days. (page 1777). The effects of the differently polarized light are shown in figure 4. The abstract describes the use of blue (488 nm) laser light to irradiate the sample, followed by the use of two red beams to inscribe the grating. The blue beam is in the p polarization (left column, page 1777) and the red beams are in the s- polarization. (page 1776, right column). See also page 1777-1778 and figure 4. Figure 3 shows the gratings formed is relatively stable over the period of 50+ hours. The poling is photoinduced by the first beam.

The applicant implies that the grating is not stable, but figure 3 refutes this position. The increased stability is attributable to the recording taking place at a temperature below the Tg of the polymeric composition.

7. Claims 7-15,21 and 23-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jager et al., "Bicolor surface reliefs in azobenzene side chain polymers", Appl. Opt., Vol. 40(11) pp. 1776-1778 (04-2001), in view of Wu et al., "Transient biphotonic holographic grating in photoisomerizative azo materials", Phys. Rev. B, Vol. 57(7) pp. 3874-3880 (02/1998).

Wu et al., teach PMMA/methyl yellow or ethyl orange/polyvinyl alcohol polymer compositions formed as coatings. (right column, 3876). An experiment is conducted where the

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488 nm line or an Argon ion laser was either s, p or circularly polarized and the writing and probe HeNe laser beams are all s polarized. Figure 7 shows that the decay in diffraction efficiency is slow, on the order of minutes (600+ seconds). The red beam is diffracted for detection (right column, page 3878).

To address then embodiments bounded by the claims, but not anticipated above, the examiner cites Wu et al., "Transient biphotonic holographic grating in photoisomerizative azo materials", Phys. Rev. B, Vol. 57(7) pp. 3874-3880 (02/1998) who teaches the use of the red (633 nm) laser for the readout and holds that it would have been obvious to use the same technique in the process of Jager et al., "Bicolor surface reliefs in azobenzene side chain polymers", Appl. Opt., Vol. 40(11) pp. 1776-1778 (04-2001) to determine the diffraction efficiency based upon this laser already being part of the apparatus. Further, it would have been obvious to use circularly polarized argon ion laser in place of the p polarized laser based upon the direction in the left hands column of page 3879 of Wu et al. with a reasonable expectation of forming a useful non-volatile holographic grating.

8. Claims 7-15, 21 and 23-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jager et al., "Bicolor surface reliefs in azobenzene side chain polymers", Appl. Opt., Vol. 40(11) pp. 1776-1778 (04-2001), in view of Wu et al., "Transient biphotonic holographic grating in photoisomerizative azo materials", Phys. Rev. B, Vol. 57(7) pp. 3874-3880 (02/1998), further in view of Fei et al. "Biphoton holographic storage in methyl orange and ethyl orange dyes", Opt. Lett., Vol. 19(6) pp. 411-413.

Fei et al. "Biphoton holographic storage in methyl orange and ethyl orange dyes", Opt. Lett., Vol. 19(6) pp. 411-413 (03/1994) teach methyl orange or ethyl orange are

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dissolved/dispersed in polyvinyl alcohol matrices as discussed in the left column on page 411, coated as films and holograms recorded using an arbitrarily polarized 514.5 nm (green) Ar ion laser beam and two vertically polarized HeNe writing beams (632.8 nm, red) to use a two photon (biphotonic) process for recording these holograms. The hologram is read using a low power HeNe beam. (1/5 the power of the writing beams). The argon ion is turned on first, then the HeNe lasers, and then the argon ion laser is turned off (figure 2). The decays are on the order of tens of seconds. The benefits of the pre-exposure is shown with respect to figure 2.

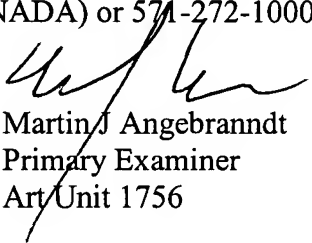
It would have been obvious to modify the process of resulting from the combination of Jager et al., "Bicolor surface reliefs in azobenzene side chain polymers", Appl. Opt., Vol. 40(11) pp. 1776-1778 (04-2001) and Wu et al., "Transient biphotonic holographic grating in photoisomerizative azo materials", Phys. Rev. B, Vol. 57(7) pp. 3874-3880, by turning the argon ion laser on earlier to facilitate a pre-exposure as taught by Fei et al. "Biphoton holographic storage in methyl orange and ethyl orange dyes", Opt. Lett., Vol. 19(6) pp. 411-413 with a reasonable expectation of gaining the advantages ascribed to this by Fei et al. "Biphoton holographic storage in methyl orange and ethyl orange dyes", Opt. Lett., Vol. 19(6) pp. 411-413

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebrannndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Martin J. Angebranndt  
Primary Examiner  
Art Unit 1756

8/6/2007